OCEAN GALES AND STORMS, SEPTEMBER 1934—Continued

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH PACIFIC OCEAN			° ′	° ′				*Inches*					
Nitro, U. S. N. Auxiliary	San Diego	Balboa	10 48 N.	87 48 W.	Sept. 1	6p, 1	Sept. 1	29.79	NE	E, 4	NE	NE, 8	E-NE.
Amagisan Maru, Jap. S. S.	Los Angeles	Yokohama	47 35 N.	177 35 E.	Sept. 3	3a, 3	Sept. 3	29.09	NW	W, 7	NNW	NNW, 8	SW-W.
Golden Dragon, Am. S. S	San Francisco	do	45 25 N.	170 35 W.	do	6p, 3	Sept. 4	29.39	WSW	WSW, 8	W	W, 8	SW-W.
Nichiyo Maru, Jap. M. S	Yokohama	Los Angeles	42 50 N.	160 40 E.	Sept. 9	10a, 8	Sept. 10	29.40	NW	N, 7	WNW	NW, 8	S-N-W.
Golden Dragon, Am. S. S	San Francisco	Yokohama	45 16 N.	167 52 E.	do	2a, 9	Sept. 9	29.14	NW	S, 7	NW	NW, 9	S-W-NW.
Fernmoor, Nor. M. S.	Philippine Islands.	Los Angeles	40 20 N.	172 00 E.	Sept. 8	Noon 9	do	29.61	SE	WNW, 8	WNW	S, 9	SSW-WNW.
Ethan Allen, Am. S. S.	Los Angeles	Shanghai	31 00 N.	136 55 E.	do	6a, 9	do	29.65	SSE	S, 8	S	SSE, 8	SSE-S.
Tosari, Du. M. S.	Philippine Islands.	Los Angeles	41 18 N.	177 25 E.	Sept. 9	7p, 9	do	29.40	S	S, 8	S	S, 9	S-W-WNW.
San Angelo, Am. S. S.	Los Angeles	Balboa	15 35 N.	100 22 W.	Sept. 10	4p, 10	Sept. 10	29.70	ESE	ESE, 8	ESE	ESE, 8	
Seattle, Am. S. S.	Tacoma	Yokohama	50 30 N.	174 54 W.	Sept. 9	Noon, 11	do	29.76	ESE	SSW, 6	SE	SE, 8	SE-SSW-W.
Santos Maru, Jap. M. S.	Los Angeles	do	40 21 N.	155 32 E.	Sept. 15	9a, 15	Sept. 15	29.45	WNW	WSW, 7	NW	NW, 8	SW-WNW-NW.
Sanyo Maru, Jap. M. S.	do	do	42 52 N.	159 37 E.	do	2p, 15	do	29.17	NW	SSW, 6	NNW	N, 10	SE-SSW.
Ogura Maru, Jap. M. S.	Yokohama	Los Angeles	41 24 N.	165 15 E.	Sept. 16	Mdt, 15	Sept. 16	29.00	N	WSW, 3	N	N, 8	SW-N.
Illinois, Am. S. S.	Philippine Islands.	San Francisco	45 22 N.	172 45 W.	Sept. 17	4a, 18	Sept. 18	29.00	E	S, 3	W	W, 9	S-W.
Ogura Maru, Jap. M. S.	Yokohama	Los Angeles	42 45 N.	174 49 W.	Sept. 19	Noon, 19	Sept. 19	29.40	S	SSW, 8	SSW	SSW, 8	SSE-SSW.
Ward, Am. M. S.	Shanghai	do	41 56 N.	164 25 E.	do	4a, 19	do	29.45	E	E, 7	ENE	E, 8	ESE-NE.
Edgar F. Luckenbach, Am. S. S.	Los Angeles	Balboa	20 42 N.	107 25 W.	Sept. 18	1a, 19	do	29.43	ESE	SE, 10	SSE	SE, 12	ESE-SE.
Pennsylvania, Am. S. S.	Balboa	San Diego	21 58 N.	108 45 W.	Sept. 19	Noon, 19	do	29.74	ESE	ESE, 7	NNE	ESE, 8	ESE-NE.
Virginia, Am. S. S.	Los Angeles	Balboa	21 59 N.	107 51 W.	do	3p, 19	do	29.66	ENE	E, 9	SE	E, 9	E-SE.
Malolo, Am. S. S.	do	do	21 03 N.	109 16 W.	do	8p, 19	do	29.22	NE	NW, 9	S	NW, 9	NE-NW-S.
City of Vancouver, Br. S. S.	Tsingtao	Vancouver	47 20 N.	179 32 W.	do	3p, 19	Sept. 20	28.89	ENE	NNW, 9	WNW	NW, 10	NE-NNW-NW.
Point Clear, Am. S. S.	Balboa	Los Angeles	23 00 N.	110 20 W.	Sept. 18	5a, 20	do	29.68	E	NE, 6	NE	ENE, 9	
Mauna Ala, Am. S. S.	Los Angeles	Balboa	22 23 N.	109 14 W.	Sept. 19	9a, 20	do	28.81	N	NNE, 11	SSE	NE, 12	NE-N-WSW.
Iowan, Am. S. S.	Balboa	Los Angeles	21 — N.	108 30 W.	do	8a, 20	do	29.61	SW	S, 9	SSE	S, 9	None.
Pres. Monroe, Am. S. S.	do	do	22 50 N.	110 21 W.	Sept. 20	9p, 20	Sept. 21	29.32	SSE	E, 10	N	NE, 11	SSE-E-NE.
Lossiebank, Br. M. S.	do	do	22 12 N.	110 22 W.	do	3a, 21	do	29.63	S	S, 7	WNW	SW, 9	S-W.
Bonneville, Nor. M. S.	Los Angeles	Kobe	32 40 N.	140 50 E.	Sept. 21	4p, 21	do	29.65	S	S, 8	SSW	S, 9	S-SSW.
Hiye Maru, Jap. M. S.	Yokohama	Vancouver	40 19 N.	151 12 E.	Sept. 22	10a, 22	Sept. 22	29.31	SW	SW, 8	NNW	NW, 9	SW-NW-N.
Ward, Am. M. S.	Shanghai	Los Angeles	41 18 N.	163 20 W.	Sept. 23	11a, 23	Sept. 23	29.10	SSE	SSW, 8	W	SW, 8	S-SSW-WSW.
Tahchee, Br. S. S.	Yokohama	do	42 30 N.	170 00 E.	Sept. 22	3a, 23	do	28.99	ESE	ESE, 9	NE	E, 9	SE-NE.
Do	do	do	43 00 N.	178 00 W.	Sept. 24	6p, 24	Sept. 24	29.24	S	S, 8	WNW	WNW, 8	SSE-WNW.
City of Vancouver, Br. S. S.	Tsingtao	Vancouver	48 09 N.	160 30 W.	Sept. 23	2a, 24	do	28.47	ESE	SSE, 9	W	W, 10	SE-SSE-S.
Wisconsin, Am. S. S.	Otaru	San Francisco	45 00 N.	172 40 W.	Sept. 24	Mdt, 24	Sept. 25	29.17	S	SW, 8	W	S, 9	S-SW-W.
Silverguava, Br. M. S.	Philippine Islands.	Portland, Oreg.	16 32 N.	127 21 E.	Sept. 28	4p, 28	Sept. 29	29.61	NNE	NE, 8	SE	E, 10	NE-E.
San Diego Maru, Jap. M. S.	Yokohama	Los Angeles	42 12 N.	161 45 E.	Sept. 27	4a, 28	Sept. 27	29.65	SE	SW, 5	SE	SE, 8	SE-SW-NE.
Arthur J. Baldwin,[3] Am. S. S.	Nome	Seattle	51 42 N.	136 50 W.	Sept. 29	—, 29	Sept. 29	29.65	NNE	NNE, 10	WNW	NNE, 10	NNE-WNW.
Pres. Jackson, Am. S. S.	Yokohama	Victoria, B. C	50 00 N.	145 18 W.	Sept. 30	3a, 30	Sept. 30	29.94	S	S, 6	S	S, 8	S.

[3] G. M. N. data only.

NORTH PACIFIC OCEAN, SEPTEMBER 1934

By WILLIS E. HURD

Atmospheric pressure.—The pressure situation over northern waters of the North Pacific Ocean showed considerable change from that during August: In September the Aleutian cyclone was well established, central in the Bering Sea, with an average pressure of 29.65 inches at St. Paul. Both here and at Dutch Harbor the mean barometer was slightly below the normal. East of the Peninsula of Alaska abnormally high pressures for the month prevailed.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, September 1934, at selected stations*

Station	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Point Barrow	30.11	+0.21	30.86	11	29.44	6
Dutch Harbor	29.70	−.06	30.20	9	29.14	24
St. Paul	29.65	−.06	30.04	2	29.22	25
Kodiak	29.90	+.19	30.24	21, 22	29.50	5
Juneau	30.03	+.11	30.43	22	29.53	17
Tatoosh Island	30.05	+.05	30.38	14	29.59	22
San Francisco	29.90	−.04	30.13	25	29.68	8
Mazatlan	29.83	+.01	29.92	2	29.74	11
Honolulu	29.98	−.02	30.06	30	29.84	12
Midway Island	29.96	−.05	30.12	30	29.72	22, 23
Guam	29.85	+.02	29.98	22	29.76	14
Manila	29.74	−.08	29.82	15, 21, 27	29.54	12
Hong Kong	29.72		29.89	22	29.51	6
Naha	29.80	+.04	30.14	28	28.98	19
Chichishima	29.96	+.10	30.12	25	29.80	5
Nemuro	29.93		30.30	4	29.58	11

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

The easternmost third of the ocean, north of the tropics, was for the most part the seat of well-established anticyclone conditions; and few depressions of moment occurred, even in extreme northeastern waters.

Low pressure continued in the Far East.

Cyclones and gales.—A definite increase in storminess over that of August occurred along the central and western parts of the northern steamship routes during September. While some gales resulted from the eastward movement of continental cyclones, the majority were due to conditions arising from the considerable deepening of cyclones connected with the early autumn surges of the Aleutian low-pressure system. West of the one hundred eightieth meridian the majority of the gales occurred prior to the 21st of the month; east of that meridian very few gales occurred earlier than the 19th.

On about 20 days of the month, gales were reported along some portion of the routes north of the thirty-ninth parallel. While in several instances the force did not exceed 8, that of a fresh gale, yet on at least 8 days the force rose to 9 (strong gale), or to 10 (whole gale).

Only one high latitude Low of consequence formed over extreme northeastern waters. This was of brief duration and caused gales over a comparatively small area on the 29th and 30th—that of the 29th, of force 10, occurring near 52° N., 137° W.

On the 8th and 9th, gales of force 8–9 were experienced over a considerable area between 160° E. and the one hundred eightieth meridian, with lowest pressure almost down to 29 inches.

On the 15th a cyclone with lowest pressure about 29 inches appeared, central near 41° N., 165° E.; and on that

and the following day caused gales of force 8–10 in the neighborhood. The storm area moved eastward and northward; and on the 18th was closely followed by another low-pressure area of slightly greater intensity which, on the 19th to 21st, lay first to the southward of and then over the central Aleutians, with lowest pressure 28.88 inches, and maximum wind force of 10.

On the 23d gale conditions set in near 41° N., 163° W., with barometer depressed to 29.10 inches. On the 24th the pressure dropped to 28.47 inches—the lowest reading of the month in high latitudes—near 48° N., 160½° W. The gale field was of great extent on this date, with wind-forces up to 10. Thenceforward until the end of the month the cyclone fluctuated with lessened intensity north and south of the eastern Aleutians and south of the Peninsula of Alaska, with no gales exceeding force 8 reported as occurring within its boundaries.

Typhoons.—One major typhoon of disastrous proportions, and five lesser typhoons occurred in the Far East during September. Rev. Fr. Bernard F. Doucette, S. J., of the Philippine Weather Bureau, in an accompanying note, has discussed these storms; and it remains for the present report only to add a few comments with reference to the most important typhoon of the month which, according to some estimates, caused more material damage in southern and central Japan than any recent natural agency other than the great earthquake of 1923. In addition to the losses elsewhere enumerated, the partial destruction of the islands' rice crop through hurricane winds and rain must be further mentioned as a national calamity.

During the passage of the typhoon over Shikoku Island on September 21, Kochi Observatory recorded a pressure reading of 684 millimeters (26.93 inches), which is the lowest sea-level barometer reading ever recorded at an official observatory.

Cyclone off the Mexican west coast.—On September 16 a depression was forming at some distance south of Acapulco. It advanced in a northwesterly direction, and by the 18th was apparently central about 125 miles south of Manzanillo. Up to this time the depression seems to have given no evidence of severity, except that at 9 a. m. on the 18th the American S. S. *Mauna Kea*, near 20½° N., 108°10′ W., encountered very high short swells which pitched the ship violently and submerged her hatches. At 8 p. m. on the 18th, however, the American S. S. *Edgar F. Luckenbach*, southbound, encountered winds of fresh gale force in approximately 21° N., 108° W. Gales thereafter continued to be experienced by the ship until near noon of the 19th, reaching hurricane force at times between 1 and 5 a. m., with lowest barometer 29.43 at 1 a. m. in 20°42′ N., 107°25′ W., and southeasterly winds throughout.

During the 19th, 20th, and 21st the cyclone passed rather slowly northward just outside the mouth of the Gulf of California, accompanied by strong gales to hurricane velocities over a narrow region between Cape Corrientes and southern Lower California. The lowest barometer reported was 28.81 inches, read on the American S. S. *Mauna Ala*, in 22°23′ N., 109°14′ W., at 8 p. m. of the 20th, accompanied by a northeast gale of hurricane force. By morning of the 22d the cyclone, diminished to a shallow Low, lay just outside Lower California near 24° N., whence it moved northward and apparently disappeared over the peninsula.

A minor disturbance appeared near Acapulco on the 10th and off Manzanillo on the 11th. Reports from the northeastern edge of the disturbance show a gale of force 8 southwest of Acapulco on the 10th and a gale of force 7 near Cape Corrientes on the 11th.

Fog.—Fog lessened materially this month as compared with August. It was observed on the 21st and 22d at the entrance of the Gulf of California; on 8 days off the California coast; and on 4 days off the Washington and Oregon coasts. Along the entire length of the upper steamship routes, scattered fogs occurred on 1 to 4 days in most of the 5° squares.

TYPHOONS IN THE FAR EAST DURING SEPTEMBER 1934

By BERNARD F. DOUCETTE, S. J.

There were six typhoons during September 1934 over the regions of the Far East. A large and very severe typhoon crossed Balintang Channel, passing close to and south of Basco, early in the month. Two typhoons moved simultaneously toward Naha, then combined (or else one vanished); but the next day found an intense typhoon which moved rapidly north and caused much destruction in Japan September 21. Toward the end of the month a typhoon crossed northern Luzon, causing considerable damage.

First typhoon, September 1–11, 1934.—About 700 miles east of the archipelago this typhoon appeared on the weather map of September 1. It moved west-northwest, changing to northwest, crossing the Balintang Channel and then recurving to the northeast when it reached the northern part of the Formosa Channel. The positions of its center are given below.

September 1, 2 p. m.: Latitude 14°.30 N., longitude 135° E.
September 2, 6 a. m.: Latitude 15° N., longitude 133° E.
September 3, 6 a. m.: Latitude 15°.30 N., longitude 130° E.
September 4, 6 a. m.: Latitude 17° N., longitude 125° E.
September 5, 6 a. m.: Latitude 20°.15 N., longitude 122° E.
September 6, 6 a. m.: Latitude 23° N., longitude 120°.30 E.
September 7, 6 a. m.: Latitude 26° N., longitude 122° E.
September 8, 6 a. m.: Latitude 29° N., longitude 125° E.
September 9, 6 a. m.: Latitude 35° N., longitude 134° E.
September 10, 6 a. m.: Latitude 44° N., longitude 144° E.
September 11, 6 a. m.: Latitude 47° N., longitude 147° E.

This typhoon passed close to and south of Basco during the forenoon of September 5; 704.38 millimeters (27.731 inches) was recorded as a minimum pressure at Basco, September 5, 6:35 a. m., with southeast winds, force 5. Winds from east-northeast, force 11, were recorded before the minimum; and from the south, force 10, after the minimum.

The winds and the rains caused great destruction over the northern regions of the archipelago, floods washing away bridges, roads being inundated, and crops destroyed.

Second typhoon, September 11–16, 1934.—This typhoon formed in the Pacific, and first gave indications of its existence on the weather map September 11, 2 p. m., its location being latitude 17° N., longitude 128° E. It moved west-northwest to latitude 18° N., longitude 125° E. (Sept. 12, 6 a. m.), continued west-northwest, crossing Balintang Channel as a depression, and increased in energy September 13 (latitude 19° N., longitude 120° E.). The next day it was close to and south of Pratas at latitude 20° N., longitude 116° E. On the 15th it was over the island of Hainan and it disappeared over Indo-China, September 16.

Third and fourth typhoons, September 13–22, 1934.—These two typhoons formed within 3 days of each other over the Pacific near the Caroline Islands. They moved over different paths to the region south of Naha, where both combined into one severe typhoon, or else one increased in intensity while the other vanished. The single typhoon of September 20 moved rapidly northward